

## PATENT COOPERATION TREATY

PCT

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>BP106372/SY</b>	FOR FURTHER ACTION See Form PCT/IPBA/416	
International application No. <b>PCT/FI2003/000226</b>	International filing date (day/month/year) <b>25-03-2003</b>	Priority date (day/month/year) <b>25-03-2002</b>
International Patent Classification (IPC) or national classification and IPC <b>G01N 27/62, G01P 5/08</b>		
<b>Applicant</b> <b>LAPPEENRANNAN TEKNILLINEN KORKEAKOULU et al</b>		

<ol style="list-style-type: none"> <li>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</li> <li>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</li> <li>3. This report is also accompanied by ANNEXES, comprising:           <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of _____ sheets, as follows:               <ul style="list-style-type: none"> <li><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> </li> <li>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</li> </ol> </li> </ol>																
<ol style="list-style-type: none"> <li>4. This report contains indications relating to the following items:           <table border="0"> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. IV Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII Certain observations on the international application</td> </tr> </table> </li> </ol>	<input checked="" type="checkbox"/>	Box No. I Basis of the report	<input type="checkbox"/>	Box No. II Priority	<input type="checkbox"/>	Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input checked="" type="checkbox"/>	Box No. IV Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI Certain documents cited	<input type="checkbox"/>	Box No. VII Certain defects in the international application	<input type="checkbox"/>	Box No. VIII Certain observations on the international application
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<input type="checkbox"/>	Box No. VIII Certain observations on the international application															

Date of submission of the demand <b>21-10-2003</b>	Date of completion of this report <b>04-05-2004</b>
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer <b>Gordana Ninkovic /itw</b> Telephone No. +46 8 782 25 00

Form PCT/IPEA/409 (cover sheet) (January 2004)

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/US2003/000226

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- This report is based on a translation from the original language into the following language english, which is the language of a translation furnished for the purposes of:
- international search (under Rules 12.3 and 23.1(b))  
 publication of the international application (under Rule 12.4)  
 international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*:

- the international application as originally filed/furnished  
 the description:

pages \_\_\_\_\_ as originally filed/furnished  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- the claims:

pages \_\_\_\_\_ as originally filed/furnished  
 pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- the drawings:

pages \_\_\_\_\_ as originally filed/furnished  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3.  The amendments have resulted in the cancellation of:

the description, page(s) \_\_\_\_\_  
 the claims, Nos. \_\_\_\_\_  
 the drawings, sheets/figs \_\_\_\_\_  
 the sequence listing (specify): \_\_\_\_\_  
 any table(s) related to the sequence listing (specify): \_\_\_\_\_

4.  This report has been established as if (some or all) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

the description, page(s) \_\_\_\_\_  
 the claims, Nos. \_\_\_\_\_  
 the drawings, sheets/figs \_\_\_\_\_  
 the sequence listing (specify): \_\_\_\_\_  
 any table(s) related to the sequence listing (specify): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/FI2003/000226

## Box No. IV Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:
  - restricted the claims.
  - paid additional fees.
  - paid additional fees under protest
  - neither restricted nor paid additional fees.
  
2.  This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
  
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is:
  - complied with.
  - not complied with for the following reasons:

## Invention 1:

The invention according to claims 1-26 relates to a cell structure, device, system and method for identifying of matter contents in gases based on ions electrical mobility, where the gas is transported through the flow channel including a reference cell, an ionization cell and an analysing cell and two electrical fields are applied.

## Invention 2:

The invention according to claims 27-28 relates to a method for determining flow speed of a gas based on changes of charges of three pairs of electrodes during applying of three electrical fields.

4. Consequently, this report has been established in respect of the following parts of the international application:
  - all parts
  - the parts relating to claims Nos. \_\_\_\_\_

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/FI2003/000226

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

**1. Statement**

Novelty (N)	Claims 1-28	YES
	Claims _____	NO
Inventive step (IS)	Claims 1-28	YES
	Claims _____	NO
Industrial applicability (IA)	Claims 1-28	YES
	Claims _____	NO

**2. Citations and explanations (Rule 70.7)****Cited documents:**

- 1.US 5475217 A (R.F.D.Bradshaw), 12 December 1995
- 2.WO 9416320 A1 (Environics OY), 21 July 1994
- 3.WO 8707720 A1 (Puumalainen Pertti), 17 December 1987
- 4.WO 0169217 A2 (National Research Council Canada), 20 September 2001
- 5.WO 9207255 A1 (Puumalainen Consults OY), 30 April 1992
- 6.US 5455417 A (E.Sacristian), 3 October 1995
- 7.US 4393719 A (W.Wiegand et al), 19 July 1983
- 8.US 5701009 A (R.Griffiths et al), 23 December 1997
- 9.US 4193296 A (K.Janka), 18 March 1980.
- 10.US 3688106 A (T.Brain), 29 August 1972

The cited documents represent the general state of the art. The invention defined in claims 1 - 28 is not disclosed by any of these documents.

The cited prior art does not give any indication that would lead a person skilled in the art to the claimed cell structure, device, system and method for identifying of matter contents in gases based on ions electrical mobility and claimed method for determining flow speed of a gas based on changes of charges of electrodes during applying of electrical fields.

Therefore, the claimed invention is not obvious to a person skilled in the art.

Accordingly, the invention defined in claims 1 - 28 is novel and is considered to involve an inventive step. The invention is industrially applicable.